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244 654 as the one of the famous "groundnut scheme" of Tanganyika. Moreover, they have greatly contributed to the rationalization of the traditional techniques, also studied since 1924 at the experimental center of Bambey.

242 244 654 3. Improvements in the traditional methods of cultivation. The center of Bambey, administered by the Institut de recherche des huiles /12/ et oléagineux (I.R.H.O.) /Institute for Research on Oils and Oily Substances/ has made great efforts, especially since the end of the last war, in the selection of seed, instituting new methods of cultivation, and protection of the soil and the natural environment. These studies, together with the information furnished by Boulel and Séfa, have given very encouraging results.

1) The selection of seed. In traditional cultivation, the cultivator had to take the seed for the next season from his own harvest. This system was not very satisfactory: the seeds were often of mediocre quality, and they did not keep well; finally, very often the cultivator improvidently sold part of his stock before the end of trading and consequently had [426] to resort to usurious loans.

Since 1924 the center of Bambey has introduced seed selected for high yield, adapted to the natural conditions of each productive region. The adoption of creeping varieties for the dry regions of the north and of erect plants for the more moist and compact soils of the south assures an increase of 20% in yields. In 1935 26 metric tons of selected seed had been distributed; in 1951 this figure exceeded 35,000. Since then more than 90% of the seed used has been selected seed. The popularization and the distribution of these seeds are handled by the satellite centers, but above all by the sociétés de prévoyance /welfare societies/, which in 1958 became the Sociétés mutuelles de développement rural (S.M.D.R.). The distribution of the seed takes place between the closing of

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242 244 654 trade and the beginning of cultivation, at an interest of 20% on a base of about 100 kilograms per cultivator. Reimbursement takes place before the opening of trade, the greatness of the loss explaining the high rate of interest. The seeds stocked by these Mutuelles are disinfected, and samples are sent to Bambey for analysis.

2) Improvement in the techniques of cultivation. An agricultural calendar restricted to four months and demanding hard labor, very rudimentary implements, and the absence of fertilizers explain in large part the lack of efficiency of the traditional methods.

The example of Koutiala in the Sudan, where some plows were distributed, has shown that the use of this implement is often prohibited in a tropical environment. In contrast, Bambey and Boulel have successfully experimented with small equipment, hoes and drills /semoirs/, in mixed /attelée/cultivation. These light implements can greatly facilitate the work of the peasant. A great obstacle remains in the mediocrity of the [231] animal husbandry, inasmuch as it is divorced from agriculture. The donkeys throughout the country, the camels in the north, and the cattle entrusted to the Peul have never been regarded as draft animals. Today 20,000 light drills, sold on credit by the S.M.D.R., are in service. Up to now the hoes have not had the same success.

/13/ Mixed cultivation also has the advantage of linking cultivation and animal husbandry and of permitting the agriculturalist to utilize the manure, as the Sérère know how to do. The experiences of Bambey have shown that manuring is to be done for millet, but not for groundnuts, under penalty of harvesting many empty shells. The use of millet as green manure seems very beneficial on these unstable lands; the application of the fertilizer compound N.P.K., in the form of tablets to avoid rapid leaching, assures returns 30% higher. At the present time the Mutuelles are distributing about 6,000 metric tons of fertilizer a year. The high price of these imported products is an obstacle to their popularization, but some

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242 244 654 specialists envisage the utilization of the phosphates of Thiès.

3) Protection of the environment. The cultivation of the groundnut with the traditional techniques carries with it grave dangers for the soil. The abusive burning of brush denudes it and facilitates the erosive action of the dry harmattan which blows at the end of the dry season, from the month of March. The cultivation, most often improvident, leads to the rapid deterioration of very unstable soils. In the west the sands are impoverished, the salts are rising to the surface; in the east the lateritic cuirass appears at a shallow depth.

[313] [656] Legislation is intervening in defense of the natural environment; the decree of 4 July 1935 has interdicted the cutting of trees without authorization and has regulated the burning of brush and clearing. The most effective remedies, however, have been introduced by experimentation and recommended after a serious inventory of the soils. The example of Boulel has shown that bands of natural vegetation separating the clearings by passages perpendicular to the roads are an effective remedy against the action of the wind. The instability of the soils requires a strict system of rotation. Bambey and Boulel have proved that the sequence of millet, groundnuts, and fallowing is the best for preserving them. Fallowing for two years, recommended in the south, is insufficient in the north, where six years of rest seems to be indispensable. It is undeniable that for several years these crop rotations have been followed more and more, especially in the pilot sectors. Finally, the rearrangement of the map of the groundnut, amply primed, may have beneficial consequences. The circles /cercles, administrative districts/ bordering the Senegal River have practically abandoned this crop (Podor, Matam, etc.); northern Cayor, with a dry climate, impoverished soils, and a large population, has had a very marked decline in groundnuts to the profit of millet. In contrast, the new regions in Siné-Saloum and Tambacounda typically become groundnut-producers.

All of these innovations can actually bear fruit only with the acceptance of the peasant masses, which poses the problem

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of training. This is one of the essential preoccupations of the present Sengalese government.

II. The "Trade" of Groundnuts

For a century the total volume of production has progressed in spectacular fashion. Actually, no statistics are available at the harvesting stage. Only the commercial figures are known with any accuracy. In any case they differ little from the total figure of production because local consumption seems to be of little importance. It is estimated that the average production of groundnuts from 1900 to 1904 was 123,000 metric tons. The more recent figures are the following: 1938-1939 campaign, 584,000 metric tons; 1942-1943 compaign, 183,000 metric tons; 1943-1944 campaign, 281,000 metric tons; 1957-1958 campaign, 808,000 metric tons; 1958-1959 campaign, 653,000 metric tons; 1959-1960 campaign, 720,000 metric tons.

Except for the period of the war, when the production of groundnuts, difficult to export, decreased to the profit of that of millet, progress was continuous, the 1957-1958 campaign being exceptionally favorable.

This production enters into the circuit of commercialization or "trade," which today is very strictly regulated.

1. The organization of "trade." The commercialization of the groundnut has replaced the "trade" in gum, slaves, and gold of the former colonial system. Although the term is still often used, its present context is very different from the acceptation of the era of the colonial pact. Trade is no longer, as Littré wished it to be, an exchange trade organized almost exclusively for the benefit of the European "trader"; today it is a commercial activity that is strictly regulated as to time and place and open only to approved intermediaries.

1.) The "campaign." "The campaign" is the period

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244 433 134 242 are much less suitable for this crop because of their composition which gives a certain acidity to the nuts, thus rendering them less suitable for industrial use in /118/ the production of fine oils. There have been attempts to correct this defect and to improve the quality of Bas-Saloum by means of seed selection and by the continued addition of seed from Sine; this has not yet been successful.

Fallow lands, however, are not lacking in the other regions of the circle.

There are 230,000 hectares planted in groundnuts. This figure represents 0.85 hectares per inhabitant. This is about 1/11 of the total area of the circle.

In 1914 this crop extended over 70,000 hectares. It has thus tripled.

The production, which was 75,000 tons in 1918, is about 140,000 tons today. It has doubled in 10 years. It amounts to almost a third of the harvest of Senegal.

One can determine the production of groundnuts in the circle since 1921 by the following figures (in tons):

Years	1921	1922	1923	1924
Tons	80,000	90,000	110,000	125,000
Years	1925	1926	1927	
Tons	135,000	145,000	140,000	

167 242 These results are due in part to the increase in the population by the influx of foreign workers into the circle, who came to settle there or who hire themselves out, and in part to the selection of seeds and their distribution in ever increasing quantities.

654 441 474 The credit for this work is to be given to the administration, the Société de Prevoyance /Welfare Society/, and the Chambre de Commerce of Kaolack, whose combined efforts have made it possible to achieve such a fine result.

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244 433 242 There is no doubt, however, that the yield per hectare is diminishing and that on much of the land today it is no more than 500-600 kilograms per hectare, instead of the 700-800 kilograms, and even 900, as has been seen sometimes in Sine. The land is becoming exhausted as a result of the lack of fertilizer and the absence of crop rotation. Two other factors likewise come into play: the too primitive native methods of cultivation and the inadequate selection of seeds. The native cultivator continues to work his land with the [412] hilaire, a kind /Pl. II appears here/ /119/ of spade with which he contents himself with scratching the soil. He thus reduces his work too much; he does his dressings badly or inadequately.

It has been demonstrated by the experiments made by the Compagnie française de l'Afrique Occidentale at Latmingué that with mechanical farm implements one could easily double the yield per hectare. On newly cleared land and with these methods, the yield has never been less than 1,000 kilograms and at times has reached 1,500 kilograms per hectare. It is necessary to persuade the native that he will profit by working the land with a little better equipment. The agricultural [654] services are working at this, and it is to be hoped that the more modern cultivation methods will double the yield. This is a critical problem.

243 433 Millet. Millet is likewise a crop on the road to progress. The types cultivated are: small and great millet, or, according to their native names, souna, sanio, bassi, fehla.

In 1927, the cultivated area was 240,000 hectares, with a total production of 119,000 tons, a little more than the needs of the population. In 1925, for a production of 80,000 tons, the population had sowed 210,000 hectares. The surplus production is consumed in the regions bordering Sine-Saloum.

Rice. Different varieties of rice are cultivated, especially in Sine and Bas-Saloum, where the annual rainfall is greater and where the soil is suitable for this crop. One can estimate that 15,000 hectares are planted to rice with a total

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433 Truck gardening. Truck gardens exist in the major
244 centers. This is still, however, a European crop, the native
242 consuming very little of our vegetables.

An experimental garden, or rather a nursery, was set up in Kaolack about 20 years ago. This nursery provided many tree plants for the Europeans and natives (eucalyptus, mimosa, flamboyants, Gambia, mahogany, silk-cotton trees, orange trees, lemon trees, and guava trees).

[648] /121/ European crops. Concessions. No agricultural colonization has been undertaken by Europeans, except at Latmingué.

In 1920, the Compagnie Française de l'Afrique Occidentale requested a concession of 200 hectares at Latmingué, 20 kilometers southeast of Kaolack, very near the Saloum, in order to conduct experiments on the mechanical cultivation of groundnuts. Improvements were made for four years. Improved agricultural equipment was used (tractors, gang plows, mechanical seeders, pulverizers, harrow-plows, and pickers). The tests made it possible to get an idea of the advantages of mechanical cultivation of the groundnut. The shortage of manpower, however, was an obstacle to extending the cultivation. The Compagnie Française abandoned this concession, which was recovered and expanded by the Société des Plantations of Latmingué, which now exploits it. The latter cultivates manioc exclusively. It has already cleared 200 hectares and planted 270 hectares in manioc. It is trying to cultivate this plant annually in nine months instead of 18. This development should be watched with interest. The needs of the mother country for manioc are considerable, and Senegal would find there another source of economic prosperity.

233 Animal husbandry. Pasturage is abundant, especially during the rainy season. It is sufficient to raise large herds of cattle, sheep, horses, and donkeys. Epidemics, however, decimate the cattle, which vary between 250,000 and 300,000 heads. During the dry season, the problem of animal fodder is doubled by the difficulty of finding water for the

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654 474 244 [251] From 1907 to 1910, storehouses were built to shelter the seeds. In 1910, these storehouses were multiplied in order to be more within the reach of the borrowers. On December 6, 1910, a decree of the governor of Senegal approved the definitive statutes of this society. The latter, on the basis of the experience of several years, have just been supplemented and revised.

The society of Sine-Saloum has 19 sections distributed throughout the circle.

As early as 1911 it had 160,000 members, and its cash on hand amounted to 139,499 francs. Its storehouse stock was 317 tons of selected seed.

Today, the society has property valued at more than 1 million. It has an annual income and expenditure budget of 5 million, including the value of the seeds which it keeps /128/ in its storehouses for the loans that it grants to its members for reimbursement in kind.

Since it demands an interest of 20%, it very rapidly increases its stock of seed. Thus, in 1928 it was holding more than 5,000 tons of seed. By 1929, it will have 7,000 tons. This is the precious guarantee for a fruitful harvest.

[242] Because all of this seed is carefully selected by the native chiefs under the control of the administrator, with methodical rigor. Although some chiefs are less strict in the selection, the majority understand their role. In the cantons of Diokoul Gandiaye, Kahone, Birkelane, and in those of Sine, Sokone, Sanghako, Koungheul, and Kaffrine, the seeds are sorted one by one, and only the shells with two nuts are accepted.

The cultivator quickly yields to these requirements, because he has recognized the necessity for them.

These loans are made in the month of June, before sowing time. They are repayable in kind in the month of December, after the harvest, with an interest of 20%, the said interest likewise payable in kind.

No defaults have been reported. The loans are for two hectoliters per cultivator.